Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Please amend claim 10.

1. (Original) An electrolyte for a lithium secondary battery comprising:

a non-aqueous organic solvent; and

a vinyl sulfone

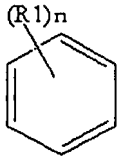
where the vinyl sulfone is present in an amount from 0.05 to 0.5 wt% on the basis of total weight of the electrolyte.

2. (Original) The electrolyte for a lithium secondary battery according to claim 1, wherein the vinyl sulfone is present in an amount from 0.2 to 0.5 wt% on the basis of total weight of the electrolyte.

3. (Original) The electrolyte for a lithium secondary battery according to claim 2, wherein the vinyl sulfone is present in an amount from 0.3 to 0.5 wt% on the basis of total weight of the electrolyte.

4. (Original) The electrolyte for a lithium secondary battery according to claim 1, wherein the non-aqueous organic solvent is a mixed solvent of a cyclic carbonate and linear carbonate

5. (Withdrawn) The electrolyte for a lithium secondary battery according to claim 1, wherein the non-aqueous organic solvent is a mixture of the carbonate solvents and aromatic hydrocarbon solvents of Formula (IV):

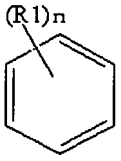


(IV)

wherein R1 is a halogen or a C_1 to C_{10} alkyl, and n is an integer from 0 to 6.

6. (Withdrawn) The electrolyte for a lithium secondary battery according to claim 5, wherein the aromatic hydrocarbon solvents are selected from the group consisting of benzene, chlorobenzene, nitrobenzene, fluorobenzene, toluene, trifluorotoluene, xylene and mixtures thereof.

7. (Withdrawn) The electrolyte for a lithium secondary battery according to claim 1, wherein the non-aqueous organic solvent is a mixture of cyclic carbonate, linear carbonate, and aromatic hydrocarbon solvents of Formula (IV), which are mixed in a volume ratio of 10-40: 40-80: 5-40:



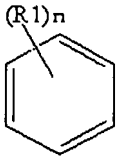
(IV)

wherein R1 is a halogen or a C_1 to C_{10} alkyl, and n is an integer from 0 to 6.

8. (Original) The electrolyte for a lithium secondary battery according to claim 1, wherein the electrolyte further includes gamma butyrolactone in an amount from 10 to 30 parts per volume on the basis of 100 parts per volume of the non-aqueous organic solvent.

9. (Withdrawn) An electrolyte for a lithium secondary battery comprising:

a non-aqueous organic solvent comprising cyclic carbonate, linear carbonate, and aromatic hydrocarbon solvents of Formula (IV), which are mixed in a volume ratio of 10-40: 40-80: 5-40;



(IV)

wherein R1 is a halogen or a C_1 to C_{10} alkyl, and n is an integer from 0 to 6;

gamma butyrolactone in an amount from 10 to 30 parts per volume on the basis of 100 parts per volume of the non-aqueous organic solvent; and

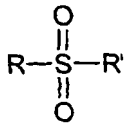
a vinyl sulfone in an amount from 0.05 to 0.5 wt% on the basis of total weight of the electrolyte.

10. (Currently Amended) The electrolyte for a lithium secondary battery according to claim 1, wherein the non-aqueous organic solvent comprises ~~cyclic carbonate is~~ ethylene carbonate and [[the]] a linear carbonate [[is]] selected from the group consisting of dimethyl carbonate (DMC), diethyl carbonate (DEC), methylethyl carbonate (MEC) and mixtures thereof.

11. (Original) An electrolyte for a lithium secondary battery comprising:

a non-aqueous organic solvent; and

a sulfone based organic compound represented by the following Formula (I):



(I)

where R and R' are independently selected from the group consisting of an alkenyl group and a halogen substituted alkenyl group, wherein the sulfone based organic compound is present in an amount from 0.05 to 0.5 wt% on the basis of total weight of the electrolyte.

12. (Withdrawn) The electrolyte for a lithium secondary battery according to claim 11, wherein the halogen selected from the group consisting of fluoro, chloro, bromo, and iodo.

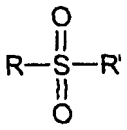
13. (Original) The electrolyte for a lithium secondary battery according to claim 11, wherein the sulfone based organic compound is vinyl sulfone.

14. (Withdrawn) A lithium secondary battery comprising:

an electrolyte comprising a non-aqueous organic solvent and a sulfone based organic compound represented by the following Formula (I) ;

a positive electrode including lithium-transition metal oxides as a positive active material; and

a negative electrode including carbon, carbon composite, lithium metal, or lithium alloy as a negative active material:



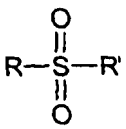
(I)

where R and R' are independently selected from the group consisting of an alkenyl group and a halogen substituted alkenyl group.

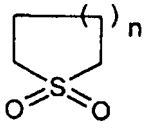
15. (Original) An electrolyte for a lithium secondary battery comprising:

a non-aqueous organic solvent; and

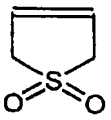
a sulfone based organic compound represented by the following Formulae (I), (II), and (III), and mixtures thereof:



(I)



(II)



(III)

where R and R' are independently selected from the group consisting of primary alkyl groups, secondary alkyl groups, tertiary alkyl groups, alkenyl groups, aryl groups; halogen substituted primary alkyl groups, halogen substituted secondary alkyl groups, halogen substituted tertiary alkyl groups, halogen substituted alkenyl groups, and halogen substituted aryl

groups, and n is from 0 to 3, wherein the amount of the sulfone based organic compound is from 0.1 to 5 weight% based on the total amount of electrolyte.

16. (Withdrawn) The electrolyte for a lithium secondary battery according to claim 15, wherein the halogen is selected from the group consisting of fluoro, chloro, bromo, and iodo.

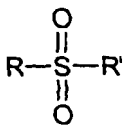
17. (Original) The electrolyte for a lithium secondary battery according to claim 15, wherein the sulfone based organic compound is selected from the group consisting of methyl sulfone, vinyl sulfone, phenyl sulfone, 4-fluorophenyl sulfone, benzyl sulfone, tetramethylene sulfone, and butadiene sulfone.

18. (Withdrawn) A lithium secondary battery comprising:

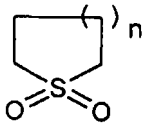
an electrolyte comprising a non-aqueous organic solvent and a sulfone based organic compound selected from the group consisting of compounds represented by the following Formulae (I), (II), and (III), and mixtures thereof;

a positive electrode including lithium-transition metal oxides as a positive active material; and

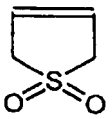
a negative electrode including carbon, carbon composite, lithium metal, or lithium alloy as a negative active material:



(I)



(II)



(III)

where R and R' are independently selected from the group consisting of primary alkyl groups, secondary alkyl groups, tertiary alkyl groups, alkenyl groups, aryl groups; halogen substituted primary alkyl groups, halogen substituted secondary alkyl groups, halogen substituted tertiary alkyl groups, halogen substituted alkenyl groups, and halogen substituted aryl groups, and n is

from 0 to 3, wherein the amount of the sulfone based organic compound is from 0.1 to 5 weight% based on the total amount of electrolyte.